



## UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/821,738	03/30/2001	Ichiro Morishita	053933-5008	5464

9629 7390 03/31/2004  
MORGAN LEWIS & BOCKIUS LLP  
1111 PENNSYLVANIA AVENUE NW  
WASHINGTON, DC 20004

EXAMINER

PATEL, GAUTAM

ART UNIT	PAPER NUMBER
2655	10

DATE MAILED: 03/31/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Docketed 4-2-04 Attorney R-JG-BL/DEC  
Case 53933-5008  
Due Date 6-30-04  
Action Final Amendment/Notice of Appeal  
By SOW Chk DW

RECEIVED

APR 02 2004

MORGAN, LEWIS & BOCKIUS LLP

BEST AVAILABLE COPY

**Office Action Summary**

Application No.

09/821,738

Applicant(s)

MORISHITA ET AL.

Examiner

Gautam R. Patel

Art Unit

2655

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
 Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 02 March 2004.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-8 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-8 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
 Paper No(s)/Mail Date \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413)  
 Paper No(s)/Mail Date \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_

Application/Control Number: 09/821,738

Page 2

Art Unit: 2655

**Response to Amendment:**

1. This is in response to amendment filed on 3-2-04 (Paper # 9).
2. Claims 1-8 remain for examination.

**Claim Rejections - 35 U.S.C. § 103**

3. The following is a quotation of 35 U.S.C. § 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

4. Claims 1-8 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Robinson et al., US. patent 5,973,817 (hereafter Robinson), in view of Kulishov, US. patent 6,353,690 (hereafter Kulishov).

As to claim 1, Robinson discloses the invention as claimed [see Figs. 7-18, especially 7-10], a dynamic control diffraction grating and a voltage-dependent phase varying material, comprising:

a voltage-dependent phase varying material [the liquid crystal] for transmitting a beam of light therethrough and varying the phase of the transmitted light beam in response to external voltages applied thereto, said voltages having different levels and being applied to said phase varying material at regular intervals in a comb form [col. 8, line 48 to col. 9, line 16];

Application/Control Number: 09/821,738  
Art Unit: 2655

Page 3

Robinson discloses all of the above elements, including a voltage-dependent phase varying material and comb form of two opposing electrodes. Robinson does not specifically disclose that these opposing electrodes can be interdigitated with each other

However, application and use of interdigitated electrodes is well known in the art for a long time. Also Kulishov clearly discloses:

That the comb form electrodes that includes two opposing electrodes interdigitated with other [col. 2, 27-56 and col. 4, lines 19-46].

Both Robinson and Kulishov are interested in improving polarization and filtering characteristics of the diffraction grating.

One of ordinary skill in the art at the time of invention would have realized that it would be advantageous to control two or more characteristics in a diffraction grating at the same time in system of Robinson, thus saving components and making design more efficient.

Therefore, it would have been obvious to have used an interdigitated comb like structure in the system of Robinson as taught by Kulishov because one would be motivated to provide control of a diffraction grating where both refractive index and the spatial periodicity may be electrically adjusted at the same time.

5. As to claims 2 and 6, Robinson discloses:  
said voltage-dependent phase varying material is liquid crystal [col. 8, lines 48-58].
6. As to claims 3 and 7, Robinson discloses:  
wherein said voltage-dependent phase varying material is a refractive index varying material for varying said phase of said transmitted light beam with a variation in its refractive index responsive to said first and second voltages [col. 7, line 39 to col. 8, line 2 and col. 8, lines 25-38].
7. As to claims 4 and 8, Robinson discloses:

Application/Control Number: 09/821,738  
Art Unit: 2655

Page 4

said refractive index varying material is lithium niobate [col. 11, lines 42-44].

8. As to claim 5, Robinson discloses:

a voltage-dependent phase varying material [the liquid crystal] for transmitting a beam of light there through and varying the phase of the transmitted light beam in response to first and second voltages applied thereto;

a first transparent electrode [fig. 7, unit 13] attached to one inner surface of a flat glass panel for applying said first voltage to said phase varying material, said glass panel containing said phase varying material, said first transparent electrode including a plurality of combs arranged at regular intervals [col. 8, line 48 to col. 9, line 16 and col. 9, lines 35-63]; and

a second transparent electrode [fig. 7, unit 15] attached to the other inner surface of said glass panel for applying said second voltage to said phase varying material, said second transparent electrode including a plurality of combs arranged at regular intervals [col. 8, line 48 to col. 9, line 16 and col. 9, lines 35-63 and figs. 7-10];

Robinson discloses all of the above elements, including a voltage-dependent phase varying material and comb form of two opposing electrodes. Robinson does not specifically disclose that these opposing electrodes can be interdigitated with each other

However, application and use of interdigitated electrodes is well known in the art for a long time. Also Kulishov clearly discloses:

That the comb form electrodes that includes two opposing electrodes interdigitated with other [col. 2, 27-56 and col. 4, lines 19-46].

Both Robinson and Kulishov are interested in improving polarization and filtering characteristics of the diffraction grating.

One of ordinary skill in the art at the time of invention would have realized that it would be advantageous to control two or more characteristics in a diffraction grating at the same time in system of Robinson, thus saving components and making design more efficient.

Application/Control Number: 09/821,738  
Art Unit: 2655

Page 5

Therefore, it would have been obvious to have used an interdigitated comb like structure in the system of Robinson as taught by Kulishov because one would be motivated to provide control of a diffraction grating where both refractive index and the spatial periodicity may be electrically adjusted at the same time.

Robinson and Kulishov were sent in the previous action dated 12-5-03.

9. Applicant's arguments with respect to claims 1-8 have been considered but are moot in view of the new grounds of rejection.

10. Applicant's amendment necessitated the new grounds of rejection presented in this office action. Accordingly, **THIS ACTION IS MADE FINAL**. See M.P.E.P. § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 C.F.R. § 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the mailing date of this final action.

#### Contact Information

11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Gautam R. Patel whose telephone number is (703) 308-7940. The examiner can normally be reached on Monday through Thursday from 7:30 to 6.

The appropriate fax number for the organization (Group 2650) where this application or proceeding is assigned is (703) 872-9314.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ms. Doris To can be reached on (703) 305-4827.

Application/Control Number: 09/821,738  
Art Unit: 2655

Page 6

Any inquiry of a general nature or relating to the status of this application should be directed to the group receptionist whose telephone number is (703) 305-4700 or the group Customer Service section whose telephone number is (703) 306-0377.



Gautam R. Patel  
Primary Examiner  
Group Art Unit 2655

March 29, 2004

Morgan, Lewis & Bockius LLP  
1111 Pennsylvania Avenue, N.W.  
Washington, D.C. 20004  
Tel. 202.739.3000  
Fax: 202.739.3001

**RECEIVED**  
**CENTRAL FAX CENTER**  
**OCT 20 2004**

**Morgan Lewis**  
COUNSELORS AT LAW

**FAX MESSAGE****Send To:**

Name: Examiner Guatam R. Patel FAX Number: 703-872-9306  
Firm: United States Patent & Trademark Office Telephone Number:

**From:**

Name David E. Connor Floor: 4 Operator Sending:  
Telephone Number: 202-739-5187 Time Sent: Date Sent: October 20, 2004  
Secretary: Tiffany Pender x5688  
Number of Pages (INCLUDING COVER PAGE): 20

**Note:**

THE INFORMATION CONTAINED IN THIS FAX MESSAGE IS INTENDED ONLY FOR THE PERSONAL AND CONFIDENTIAL USE OF THE RECIPIENT(S) NAMED ABOVE. THIS MESSAGE MAY BE AN ATTORNEY-CLIENT COMMUNICATION AND AS SUCH IS PRIVILEGED AND CONFIDENTIAL. IF THE READER OF THIS MESSAGE IS NOT THE INTENDED RECIPIENT OR AN AGENT RESPONSIBLE FOR DELIVERING IT TO THE INTENDED RECIPIENT, YOU ARE HEREBY NOTIFIED THAT YOU HAVE RECEIVED THIS DOCUMENT IN ERROR AND THAT ANY REVIEW, DISSEMINATION, DISTRIBUTION, OR COPYING OF THIS MESSAGE IS STRICTLY PROHIBITED. IF YOU HAVE RECEIVED THIS COMMUNICATION IN ERROR, PLEASE NOTIFY US IMMEDIATELY BY TELEPHONE, AND RETURN THE ORIGINAL MESSAGE TO US BY MAIL. THANK YOU.

**Comments:**

Re: U.S. Patent Application No.: 09/821,738  
Inventors: Ichiro MORISHITA et al.  
Attorney Docket No.: 053933-5008

➡ Please Confirm Safe Receipt



**PLEASE STAMP AND RETURN TO SHOW RECEIPT OF:**

In re Application of: Ichiro MORISHITA et al.

Confirmation No.: 5464

Application No.: 09/821,738

Group Art Unit: 2655

Filed: March 30, 2001

Examiner: G. Patel



**Mail Stop AF**

For: **DYNAMICALLY CONTROLLED DIFFRACTION GRATING (As Amended)**

1. Amendment and Request for Reconsideration Transmittal Form
2. Amendment and Request for Reconsideration for the above-identified application

Date: 14 June 2004

Attorney Docket No.: 053933-5008

SL/DEC/tlp

25

7

**DOCKETED**

**PLEASE STAMP AND RETURN TO SHOW RECEIPT OF:**

In re Application of: Ichiro MORISHITA et al.

Confirmation No.: 5464

Application No.: 09/821,738

Group Art Unit: 2655

Filed: March 30, 2001

Examiner: G. Patel

**Mail Stop AF**

For: DYNAMICALLY CONTROLLED DIFFRACTION GRATING (As Amended)

1. Amendment and Request for Reconsideration Transmittal Form
2. Amendment and Request for Reconsideration for the above-identified application

Date: 14 June 2004

Attorney Docket No.: 053933-5008

SL/DEC/tlp

Response Under 37 C.F.R. § 1.116  
Expedited Procedure  
Examining Group 2600

PATENT  
ATTORNEY DOCKET NO. 053933-5008

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of:

Ichiro MORISHITA, *et al.*

Application No.: 09/821,738

Filed: March 30, 2001

For: DYNAMICALLY CONTROLLED  
DIFFRACTION GRATING  
(As Amended)

Confirmation No: 5464

Group Art Unit: 2655

Examiner: G. Patel

Mail Stop AF

Mail Stop AF

The Commissioner of Patents  
Arlington, VA 22202

Sir:

AMENDMENT TRANSMITTAL FORM

1. Transmitted herewith is an Amendment and Request for Reconsideration Under 37 C.F.R. § 1.116 responding to the Office Action dated March 31, 2004 (Paper No. 9).

2. Additional papers enclosed:

- ☐ Drawings: ☐ Formal ☐ Informal (Correction)
- ☐ Information Disclosure Statement
- ☐ Form PTO-1449, \_\_\_\_\_ references included
- ☐ Citations
- ☐ Declaration of Biological Deposit
- ☐ Submission of "Sequence Listing", computer readable copy and/or amendment pertaining thereto for biotechnology invention containing nucleotide and/or amino acid sequence.

Attorney Docket No.: 053933-5008  
Application No. 09/821,738  
Page 2

3. Extension of Time

The proceedings herein are for a patent application and the provisions of 37 C.F.R. § 1.136(a) apply.

- ☒ Applicants believe that no extension of time is required. However, this conditional petition is being made to provide for the possibility that applicants have inadvertently overlooked the need for a petition and fee for extension of time.
- ☐ Applicants petition for an extension of time, the fees for which are set out in 37 C.F.R. § 1.17(a), for the total number of months checked below:

<u>Total Months Requested</u>	<u>Fee for Extension</u>	<u>[Fee for Small Entity]</u>
<input type="checkbox"/> one month	\$ 110.00	\$ 55.00
<input type="checkbox"/> two months	\$ 420.00	\$ 210.00
<input type="checkbox"/> three months	\$ 950.00	\$ 475.00
<input type="checkbox"/> four months	\$ 1,480.00	\$ 740.00

Extension of time fee due with this request: \$ 0.00.

If an additional extension of time is required, please consider this a Petition therefor.

- ☐ An extension for \_\_\_\_\_ months has already been secured and the fee paid therefor of \$ \_\_\_\_\_ is deducted from the total fee due for the total months of extension now requested.

4. Constructive Petition

- ☒ EXCEPT for issue fees payable under 37 C.F.R. § 1.18, the Commissioner is hereby authorized by this paper to charge any additional fees during the entire pendency of this application including fees due under 37 C.F.R. §§ 1.16 and 1.17 which may be required, including any required extension of time fees, or credit any overpayment to Deposit Account 50-0310. This paragraph is intended to be a CONSTRUCTIVE PETITION FOR EXTENSION OF TIME in accordance with 37 C.F.R. § 1.136(a)(3).

Attorney Docket No.: 053933-5008  
 Application No. 09/821,738  
 Page 3

5. Fee Calculation (37 C.F.R. §1.16)

CLAIMS AS AMENDED						
	Claims Remaining After Amendment		Highest No. Previously Paid	Present Extra	at Rate of	Total Fees
Total Claims (37 C.F.R. §1.16(c))	8	minus	20	0	x \$18 each=	+ \$ 0.00
Independent Claims (37 C.F.R. §1.16(b))	2	minus	3	0	x \$86 each=	+ \$ 0.00
[ ] First presentation of Multiple dependent claim(s)					\$290.00	+ \$ 0.00
SUB-TOTAL =						\$ 0.00
Reduction by ¼ for filing by a small entity						- \$ 0.00
TOTAL FEE =						\$0.00

6. Fee Payment

- ☒ No fee is to be paid at this time.
- ☐ The Commissioner is hereby authorized to charge \$ 0.00 for additional claims fee due to Deposit Account No. 50-0310.
- ☒ The Commissioner is hereby authorized to charge any additional fees which may be required, including fees due under 37 C.F.R. §§ 1.16 and 1.17, or credit any overpayment to Deposit Account 50-0310.

Respectfully submitted,

MORGAN, LEWIS & BOCKIUS LLP

By: 

Sunwoo Lee  
 Reg. No. 43,337

Date: June 14, 2004

Customer No. 009629  
 MORGAN, LEWIS & BOCKIUS LLP  
 1111 Pennsylvania Avenue, NW  
 Washington, D.C. 20004  
 Tel.: (202) 739-3000  
 MJB/DEC/tlp

1-WA/2205221.1

**This Page is Inserted by IFW Indexing and Scanning  
Operations and is not part of the Official Record**

**BEST AVAILABLE IMAGES**

Defective images within this document are accurate representations of the original documents submitted by the applicant.

Defects in the images include but are not limited to the items checked:

- ☐ **BLACK BORDERS**
- ☐ **IMAGE CUT OFF AT TOP, BOTTOM OR SIDES**
- ☐ **FADED TEXT OR DRAWING**
- ☐ **BLURRED OR ILLEGIBLE TEXT OR DRAWING**
- ☐ **SKEWED/SLANTED IMAGES**
- ☐ **COLOR OR BLACK AND WHITE PHOTOGRAPHS**
- ☐ **GRAY SCALE DOCUMENTS**
- ☐ **LINES OR MARKS ON ORIGINAL DOCUMENT**
- ☐ **REFERENCE(S) OR EXHIBIT(S) SUBMITTED ARE POOR QUALITY**
- ☐ **OTHER:** \_\_\_\_\_

**IMAGES ARE BEST AVAILABLE COPY.**

**As rescanning these documents will not correct the image problems checked, please do not report these problems to the IFW Image Problem Mailbox.**